

What is claimed is:

1. A detector for detecting a target object approaching and retreating, said detector comprising:

5 an oscillator device for generating a transmission wave;

a branching device for branching said transmission wave generated by said oscillator device;

a transmission device for transmitting said transmission wave into space as electromagnetic waves;

10 a reception device for receiving the transmission wave transmitted by said transmission device and reflected by said target object;

a mixer for mixing a reception signal received by said reception device and a branched signal branched by said branching device to output a mixed signal;

15 a judging device for switching on a detection output indicating said object approaching and retreating based on an increase and a decrease of said mixed signal outputted from said mixer;

wherein a detection distance is set within $1/4$ wavelength of frequency effective for the detection.

20 2. The detector of claim 1 wherein said oscillator device generates a non-sinusoidal wave with frequency less than $1/5$ of frequency effective for the detection.

3. The detector of claim 1 further comprising a speed correcting device for changing said detection output based on the speed of change of said mixed signal
25 outputted from said mixer.

4. The detector of claim 2 further comprising a speed correcting device for changing said detection output based on the speed of change of said mixed signal outputted from said mixer.

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5. The detector of claim 1 further comprising a speed signal outputting device for outputting a speed signal indicative of a speed of said target object based on the speed of change of said mixed signal outputted from said mixer.

5 6. The detector of claim 2 further comprising a speed signal outputting device for outputting a speed signal indicative of a speed of said target object based on the speed of change of said mixed signal outputted from said mixer.

7. A lock controller comprising a detector according to claim 3 and a main
10 apparatus which is provided to a structure with a lockable part having a handle and being adapted to open and close, wherein said main apparatus is adapted to send by wireless transmission a specified request signal to a portable device carried by said user, to receive an answer signal from said portable device in response to said request signal, and to cause said lockable part, if locked, to be unlocked after ascertaining that said received answer
15 signal is a correct signal.

8. A lock controller comprising a detector according to claim 4 and a main
apparatus which is provided to a structure with a lockable part having a handle and being adapted to open and close, wherein said main apparatus is adapted to send by wireless
20 transmission a specified request signal to a portable device carried by said user, to receive an answer signal from said portable device in response to said request signal, and to cause said lockable part, if locked, to be unlocked after ascertaining that said received answer signal is a correct signal.

25 9. A lock controller comprising a detector according to claim 5 and a main apparatus which is provided to a structure with a lockable part having a handle and being adapted to open and close, wherein said main apparatus is adapted to send by wireless transmission a specified request signal to a portable device carried by said user, to receive an answer signal from said portable device in response to said request signal, and to cause
30 said lockable part, if locked, to be unlocked after ascertaining that said received answer signal is a correct signal.

10. A lock controller comprising a detector according to claim 6 and a main apparatus which is provided to a structure with a lockable part having a handle and being adapted to open and close, wherein said main apparatus is adapted to send by wireless
- 5 transmission a specified request signal to a portable device carried by said user, to receive an answer signal from said portable device in response to said request signal, and to cause said lockable part, if locked, to be unlocked after ascertaining that said received answer signal is a correct signal.